STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

Illinois Bell Telephone Company	)	
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Proposed Implementation of High	)	Docket No. 00-0393
Frequency Portion of Loop (HFPL)/Line	)	
Sharing Service	)	

SUPPLEMENTAL Reply Testimony of Danny Watson
On Behalf of Rhythms Link, Inc.

PUBLIC VERSION

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Dated July 13, 2001

SUPPLEMENTAL REPLY TESTIMONY OF DANNY WATSON
ON BEHALF OF RHYTHMS LINKS, INC.
DOCKET 00-0393

I. INTRODUCTION

1. Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Danny Watson. I am currently Collocation Manager with Rhythms Links, Inc. ("Rhythms"). My business address is 999 Liquid Amber Lane, Sonoma, California 95476.

2. Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes. On July 2, 2001 I filed Reply Testimony in support of Rhythms Links, Inc.

3. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will address a number of technical issues related to line sharing over SBC-Ameritech's Project Pronto architecture based on documents that were not available to Rhythms at the time of my Reply Testimony. In particular, I have had the opportunity to review relevant materials supplied by SBC in the Kansas line sharing case, as well as materials obtained directly from Alcatel, which provide engineering level detail about the features, functions, and capabilities of the Litespan 2000 and 2012 NGDLC platforms, as well as information about Alcatel's future plans for these platforms.

4. Q. HAS ANY OF THIS ADDITIONAL INFORMATION CAUSED YOU TO DETERMINE THAT ANY PORTION OF YOUR PRIOR TESTIMONY WAS INCORRECT?

A. No. In fact, my review of the detailed documents referenced above reinforces the conclusions contained in my Reply Testimony. I will describe the additional information that I learned since filing my Reply Testimony.

II. ALCATEL'S LITESPAN NGDLC IS A ROBUST HIGH CAPACITY BROADBAND PLATFORM THAT CAN SUPPORT CURRENT AND FUTURE FEATURES, FUNCTIONS AND CAPACITY NEEDS

5. Q. PLEASE DESCRIBE THE ALCATEL DOCUMENTS THAT YOU REVIEWED.

A. Alcatel supplied approximately five feet of documents to Rhythms. Most of these documents are various versions of Alcatel's confidential technical and engineering publications, including a print out of the Litespan 2000/2012 Standard Practices Manual, which itself is over 5,000 pages.[1] These documents are the ones used by SBC-Ameritech engineers to install and configure the Litespan platform. As such, these documents contain all of the detailed information concerning current and planned features, functions and capabilities of the Litespan platform.

6. Q. DO THESE DETAILED ALCATEL DOCUMENTS SUPPORT AMERITECH'S ASSERTIONS IN THIS CASE REGARDING THE CAPABILITIES OF THE LITESPAN PLATFORM?

[1] The version of this Litespan manual initially supplied by Alcatel is an outdated 1997 version that does not address any of the ADSL, ATM or line sharing issues covered by later versions of that publication. I received the most current version of this manual on a CD ROM only yesterday, and therefore my review was necessarily limited. I will continue to review these materials and reserve the right to supplement my testimony should I discover additional relevant material.

A. No. As I discussed in my Reply Testimony, SBC-Ameritech's witnesses have made broad claims that the limitations of the Litespan platform preclude offering CLECs the features, functions and throughput capacity they are requesting. My review of the Alcatel documents establishes that in fact the reverse is true. Alcatel's Litespan platform is and has been undergoing constant change. The decision to make the Litespan NGDLC ADSL-capable is one example of a change that triggered a continuing series of upgrades and modifications to add features, functions and capacity.

7. Q. PLEASE GIVE SOME EXAMPLES OF THIS CONTINUOUS PROCESS OF FEATURE AND FUNCTION IMPROVEMENTS.

A. The Litespan NGDLC platform's fundamental design supports very flexible placement of line cards. In fact, Alcatel has designed its NGDLC so that any line card will fit in any slot.[2] Such design allows the Litespan NGDLC to evolve over time to support new types of advanced services as new or upgraded types of line cards become available.

Moreover, my review of the Alcatel documents confirms that existing Litespan NGDLC installations can easily be upgraded to support ADSL-based services, including line shared ADSL. SBC-Ameritech, of course, refers to this upgrade as part of Project Pronto. For example, in a cabinet remote terminal ("RT") installation, this upgrade consists of **BEGIN CONFIDENTIAL***xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx * END CONFIDENTIAL.** If significant ADSL demand is expected, one or more of the Channel Bank Assemblies may be replaced with a new chassis that includes a fan assembly mounted just below for heat dissipation.[3] Thus, ILECs need not replace all of the existing and deployed Litespan infrastructure in order to support ADSL and line sharing.

Moving beyond the flexibility of the basic Litespan architecture, Alcatel's implementation of ADSL functionality has also been undergoing upgrades and improvements. For example, the ADLU cards initially available only support two ADSL ports per card. However, software Release 11 will support four ADSL ports per ADLU card, and quad ADLU cards are, or will soon be, available.[4]

A second example of feature improvement is the availability over time of additional quality of service ("QoS") ATM classes. Alcatel's initial development of ADLU cards supported only unspecified bit rate ("UBR"). The current ADLU cards and systems software also support constant bit rate ("CBR"), and additional QoS classes are under active consideration for inclusion in future software releases.

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[2] There are current limitations on the number of ADLU cards that can be placed in the NGDLC, but such limitation is due to heat dissipation, and not to signaling or service issues.

[3] If the ILEC wants to carry the ATM traffic over separate fibers, additional fibers between the RT and the central office will need to be activated as well.

A third example of feature improvements concerns the number of permanent virtual paths ("PVPs") that each Channel Bank Assembly can support. With Software Release 10.2 and below, only one PVP per CBA is supported. However, Alcatel has long planned to address this feature deficiency. As early as **BEGIN CONFIDENTIAL***xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**[5]*****END CONFIDENTIAL.** In an email sent to Chris Boyer and James Keown on **BEGIN CONFIDENTIAL***xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**."[6] *****END CONFIDENTIAL.** This is exactly the kind of feature development I would expect to occur on a continuing basis, as customers convey to Alcatel their needs concerning Alcatel's products.

In addition to improving the features and functions currently supported by the Litespan, Alcatel is developing support for additional types of DSL. One example of this is Alcatel's announcement that Software Release 11 will support G.Lite, a type of ADSL that can be line shared. In addition, Alcatel has entered into partnerships with other manufacturers to produce line cards that support

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4 Alcatel is also developing new Channel Bank Assemblies that will support increase the capacity sixfold for POTS cards (24 ports per card).

5 Bates A14-000099 (produced by Alcatel). As this email makes clear, SBC was requesting **BEGIN CONFIDENTIAL*****xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.*****END CONFIDENTIAL.**

HSDL2, and G.SHDSL, and Software Release 11 will support both of these additional types of DSL.

8. Q. DO THE ALCATEL DOCUMENTS YOU REVIEWED INDICATE THAT THE LITESPAN THROUGHPUT CAPACITY IS EASILY EXPANDABLE?

A. Yes. Alcatel's Litespan Integrated ADSL/G.SHDSL Planning Guide dated April 2001 states

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.[7]***END CONFIDENTIAL**.

This document, and other Alcatel engineering documents I examined, discuss in detail the numerous means by which throughput capacity can be expanded on the Litespan platform. These means include:

- "un-daisy chain" the ADSL Channel Bank Assemblies. The most common initial configuration of the Litespan ADSL NGDLC platform is to "daisy chain" all the ADSL-capable Channel Bank Assemblies together, to feed a single OC-3c fiber-based signal between the RT and the central office. This base configuration addresses the reality, as

[6] Bates A04-000007 (produced by Alcatel).

[7] A01-000041 (produced by Alcatel).

recognized by Alcatel, that initially the individual OC-3c facilities will be very lightly loaded. As bandwidth demand increases and nears the capacity of a single OC-3c, removing the daisy chain configuration vastly increases the throughput capacity. For example, un-daisy chaining the three ADSL Channel Bank Assemblies in an RT would triple the throughput capacity for ADSL, from 155 Mbps to 465 Mbps.[8]

- upgrade from the Litespan 2000 to a Litespan 2012. **BEGIN CONFIDENTIAL*****

*****END CONFIDENTIAL.** Thus, this approach can also triple the ADSL ATM throughput of the NGDLC.

9. Q. DID YOUR REVIEW OF THE ALCATEL TECHNICAL DOCUMENTS REVEAL ANY MEANS FOR ADDRESSING POSSIBLE CARD SLOT CAPACITY CONSTRAINTS?

A. Yes. As noted above, Alcatel will be making available a quad ADLU card with four slots for ADSL service. This card, together with Software Release 11, will double the effective card slot capacity for supporting ADSL services. [9] In

[8] Each Channel Bank Assembly would then need separate fibers running between the NGDLC in the RT and the central office.

[9] Alcatel announced at an industry form with CLECs in Dallas, Texas on July 27, 2000, that it is considering for a future release the support of **BEGIN**

addition, the Alcatel documents reveal that ADLU cards can be placed in any of the line card slots in the Litespan NGDLC. The only constraint on the number of ADLU cards is heat dissipation, which can be addressed in a number of ways. In a CEV or hut RT configuration, up to **BEGIN CONFIDENTIAL*** ***END CONFIDENTIAL** Channel Bank Assemblies can be fully equipped with ADLU cards to support line shared POTS voice and data. In a cabinet RT configuration, the current three Channel Bank Assembly limit for ADLU cards can be easily expanded by using a slightly larger **BEGIN CONFIDENTIAL*** **********END CONFIDENTIAL** cabinet instead of the Litespan 2016 cabinet. The **BEGINCONFIDENTIAL***xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx ***END CONFIDENTIAL** Channel Bank Assemblies to be populated with ADLU cards thereby increasing the ADLU card capacity by **BEGIN CONFIDENTIAL***xxxxxxxxxx**. *****END CONFIDENTIAL** The Alcatel documents I reviewed indicated that the **BEGIN CONFIDENTIAL***xxxxxxxxxxxxxx ***END CONFIDENTIAL** is approved by Alcatel as a Litespan enclosure, and has been slated for deployment in SBC's service territory.[10]

10. Q. DO THE ALCATEL ENGINEERING DOCUMENTS YOU REVIEWED CHARACTERIZE THE LITESPAN 2000/2012 DEPLOYMENTS AS AN "OVERLAY"?

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[10] A01-000037, 000055; Documents produced in response to Data Request 7-19 (internal table)

A. No. In fact, Alcatel goes to great lengths to emphasize how easy it is to upgrade existing, already deployed Litespan 200/2012 NGDLC to be ADSL capable. Thus, in many cases, few or no changes in the outside loop plant are required to support ADSL capabilities. Moreover, Alcatel's statements indicate that Alcatel views the Litespan as the platform of the future for all services. In one document, Alcatel states:

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.[11] ***END CONFIDENTIAL**

11. Q. DID ANY OF THE ALCATEL DOCUMENTS YOU REVIEWED RECOMMEND DEPLOYING NEW LITESPAN NGDLCS IN AN OVERLAY CONFIGURATION?

A. No. In all the Alcatel documents I reviewed, I did not see any instance in which Alcatel recommends deploying new Litespan-equipped RTs while leaving all existing copper feeder plant in place and in service. Instead, the Alcatel documentation routinely describes the Litespan platform as an integrated single serving platform for all services.

12. Q. DID YOUR REVIEW OF THE ALCATEL DOCUMENTS INDICATE THAT ALCATEL'S POLICY OR PRACTICE IS TO BE THE SOLE MANUFACTURER OF LINE CARDS FOR ITS LITESPAN NGDLC?

[11] A08-000046 (produced by Alcatel).

A. No. As I stated in my Reply testimony, Alcatel announced in late June that it has licensed the manufacture of HDSL2 line cards to ADC and Adtran. The Alcatel documents included the Technology Licensing Agreements between Alcatel and both of those manufacturers. In fact, there actually are **BEGIN CONFIDENTIAL*****

.*****END CONFIDENTIAL**.[12] Alcatel also produced other Technology License Agreements, including **BEGIN CONFIDENTIAL *****

[13]*****END CONFIDENTIAL**.

I expect this trend to continue, especially given Alcatel's recently announced intentions to divest itself of virtually all of its own manufacturing facilities, and instead to outsource manufacturing functions via licensing agreements with other manufacturers. Let me make clear that it is these Alcatel manufactured or licensed line cards that Rhythms is seeking to have the ability to

[12] Bates A03-000176 to 000213; Bates A03-000214 to 000255 respectively (produced by Alcatel). Alcatel also produced the Technology License Agreement with ADC allowing manufacture of HDSL2 line cards. Bates A03-000136 to 000175.

[13] Bates A03-000102 to 000135.

place in SBC-Ameritech's Project Pronto NGDLCs. We do not propose the use of unlicensed line cards from third party manufacturers.

III. SBC-AMERITECH'S TECHNOLOGY DEPLOYMENT CHOICES FAIL TO TAKE ADVANTAGE OF THE FULL CAPABILITIES OF THE ALCATEL LITESPAN PLATFORM, AND DO NOT ENABLE EFFICIENT ACCESS TO NETWORK ELEMENTS BY COMPETITORS

13. Q. DO YOU BELIEVE SBC'S TESTIMONY CLAIMING SEVERE LIMITATIONS IN FEATURES, FUNCTIONS AND CAPACITIES OF THE LITESPAN 2000/2012 IS SUPPORTED BY THE DOCUMENTS YOU REVIEWED?

A. No. SBC presents a very misleading picture of the current and planned capabilities of the Alcatel Litespan platform. There are two primary reasons for this. First, SBC-Ameritech is presenting a very narrow snapshot in time of the initial configuration it plans to deploy as part of Project Pronto. As the Alcatel documents indicate, and as good engineering practice demands, SBC-Ameritech should make an *initial* deployment that is sized to meet the first increment of demand for services supported by that platform, and then should grow that installation in the manner described and supported by Alcatel,. as demand for throughput and features increases. Thus, the proper view is really more like a movie than a snapshot. Second, SBC focuses only on the subset of Litespan features, functions and capabilities that it has chosen for its initial deployment to support its own retail plans implemented through AADS.

14. Q. PLEASE EXPLAIN FURTHER.

A. As I discussed above, the Alcatel engineering documents present a clear and easily understood growth path for the Litespan platform. I will not repeat each of the components of that growth path here. However, I am sure that SBC-Ameritech is well aware of each of those components. Taken together, the Alcatel Litespan growth path, as discussed in the Alcatel documents, demonstrates conclusively what every outside plant engineer has known for years: fiber based serving technology really has no practical capacity limits on throughput. Thus, using the proper "movie" perspective, I would expect SBC-Ameritech to deploy Project Pronto initially just as it has, and then to grow throughput capacity, features and functions using the means supported by Alcatel and discussed above. Moreover, I would expect SBC-Ameritech to take advantage of new features and functions as they become available from Alcatel, including the quad ADLU card, high capacity POTS Channel Bank Assemblies, multiple PVPs per channel bank, etc.

Moreover, at many points where it had to make an engineering decision on its Project Pronto deployment, SBC-Ameritech has chosen the option that makes it difficult to expand the Litespan platform as growth occurs, and makes it difficult for a competitive carrier like Rhythms to obtain efficient access to the Litespan platform and the Project Pronto network elements. Here are three examples of what I mean.

- Lucent 82G cabinet. The majority of new Project Pronto RT enclosures in Illinois and throughout SBC's 13 state region, are cabinets, rather than

CEVs or huts. Deploying cabinets may well be the best engineering choice for new RT installations. However, SBC-Ameritech has chosen a cabinet size that both restricts the number of ADSL ports that can be supported, and has no room for the placement of additional equipment. The Litespan 2016 cabinet being deployed by SBC as its primary new cabinet enclosure is currently restricted to ADLU cards in three of the nine Channel Bank Assemblies. However, **BEGIN CONFIDENTIAL*****

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- Absence of cross connect field at the RT. SBC-Ameritech has chosen to deploy new Litespan RTs with the copper feeder cable pairs spliced directly onto the protector stubs that feed the NGDLC card slots, effectively hard wiring all of the feeder pairs into the NGDLC. From an engineering standpoint, this arrangement is neither required, nor optimal, especially given SBC-Ameritech's obligations to unbundled its network at technically feasible points such as at the RT. A much more practical solution, both for new and existing RT installations, would be to terminate (depending on expected demand) 25 to 100 feeder pairs per SAI on the field side of a small cross connect field located at the RT. Even assuming 100 feeder pairs per SAI (and an average of four SAIs

per RT), this cross connect field would be a small and easily locatable 1x1 400 pair facility. The line card slots that support ADLU cards could then be wired to the office-side binder posts on this cross connect field, which would allow easy and straightforward cross connection of any ADLU card to any copper loop served from that RT. In fact, my review of the documents supplied by SBC-Ameritech from the Kansas line sharing case show **BEGIN CONFIDENTIAL*****

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- Limited QoS options. SBC-Ameritech initially offered only the UBR ATM QoS class of service to CLECs in its initial deployment of Project Pronto, despite the fact that the Litespan platform supports both UBR and CBR permanent virtual circuits ("PVCs"). **BEGIN CONFIDENTIAL*****

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15. Q. DOES YOUR REVIEW OF THE SBC DOCUMENTS PROVIDED FROM KANSAS INDICATE THAT SBC HAS TAKEN A CONSISTENT POSITION CONCERNING THE ISSUE OF WHETHER IT IS TECHNICALLY FEASIBLE TO OFFER PROJECT PROJECT AS UNES?

A. No. First, let me make clear that the documents supplied by SBC in Kansas that address this issue are SBC-wide documents. Therefore, any information in them is fully applicable to Illinois. The documents that I have reviewed show clearly that for a significant period of time after SBC announced to its investors its deployment of Project Pronto, the SBC internal workgroups charged with deploying Project Pronto **BEGIN CONFIDENTIAL*****

.*****END CONFIDENTIAL.** These documents show, and I agree, that it is technically feasible to unbundle Project Pronto and offer loop and subloop UNEs on that architecture.

16. Q. DOES YOUR REVIEW OF THE SBC DOCUMENTS PROVIDED FROM KANSAS INDICATE THAT SBC HAS TAKEN A CONSISTENT POSITION CONCERNING THE ISSUE OF OWNERSHIP OF NGDLC LINE CARDS?

A. No. SBC has not taken a consistent position on this issue. The documents that I have reviewed show clearly that for a significant period of time after SBC announced to its investors its deployment of Project Pronto, the SBC internal workgroups charged with deploying Project Pronto **BEGIN CONFIDENTIAL ***

*****END CONFIDENTIAL.**[14]

17. Q. DOES YOUR REVIEW OF THE ALCATEL AND SBC KANSAS DOCUMENTS RELIEVE RHYTHMS' CONCERN ABOUT THE POTENTIAL FOR HARMFUL INTERFERENCE FROM PLACING HIGH POWER ADLU CARDS AT THE RT?

A. No. As I indicated in my Reply testimony, there is a significant risk of throughput degradation for DSL services on all-copper loops after Project Pronto is deployed, because the generation of a strong DSL signal in the field at the RT can create significant levels of cross-talk. After I filed that testimony, SBC-Ameritech supplied a document titled "Additional Noise Margin Ratio," which

SBC claims addresses and resolves this issue. Rhythms does not agree with this assertion. As is shown in the attached contribution to the T1E1.4 working group of ANSI Committee T-1,(attached to my supplemental testimony as exhibit DW-4) ADSL deployed in remote terminals is not spectrally compatible with existing home run copper based ADSL services. SBC-Ameritech's implementation of the additional noise margin ratio approach will not resolve the problems identified in Exhibit DW-4. Moreover, in the brief time I had available to examine the current Litespan Standard Practices Manual, I could find no evidence that Alcatel agrees with SBC that the additional noise margin ratio approach applied to the Litespan platform would resolve the cross talk problems shown in Exhibit DW-4.

18. Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes. However, I reserve the right to supplement my testimony should relevant information become available.

[14] Kansas Bates COVAD 001-pg. 1951, 1953-54.